

2023 MARCH | EL SEGUNDO, CA

AIAA LA-LV



SPRING
SPECIAL

Newsletter

Our monthly communication gives
the updates in AIAA LA-LV and
aerospace communities.

AIAA LA-LV University
Student Branches
mini-Conference
2023 (March II)

To protect or avenge
— 40 years of the
Strategic Defense
Initiative, by Prof.
Mike Gruntman

NASA's Webb
Telescope Receives
Michael Collins
Trophy



American Institute of Aeronautics and Astronautics
Los Angeles - Las Vegas Section

Newsletter

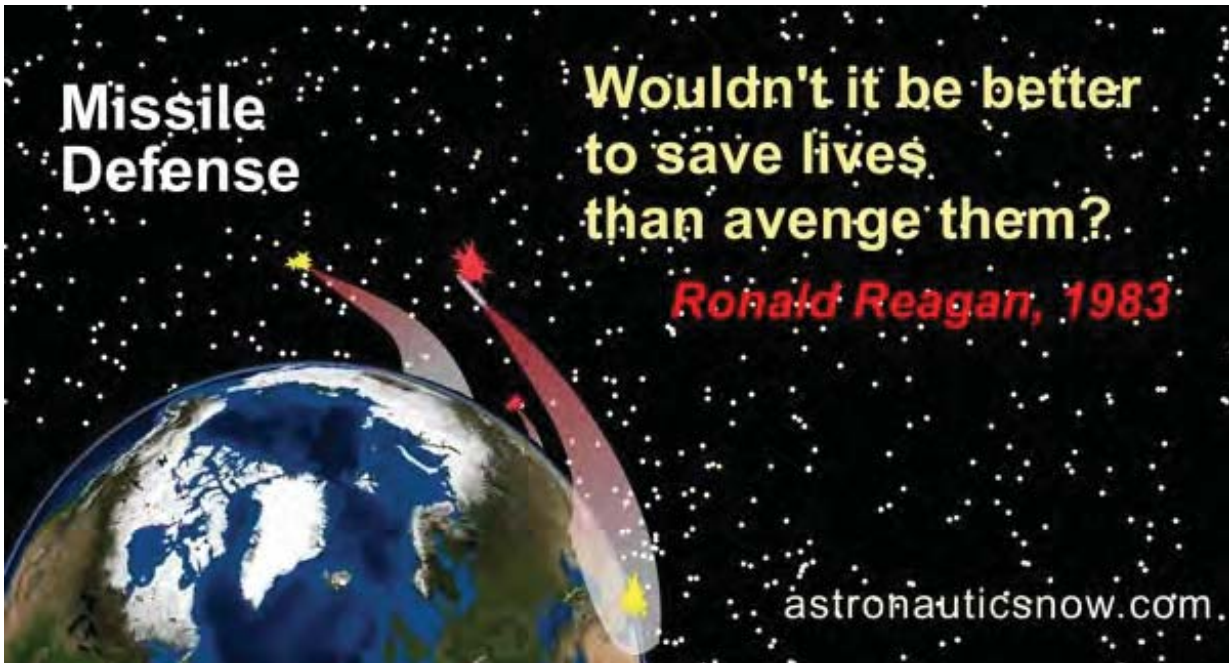


To protect or avenge -- 40 years of the Strategic Defense Initiative

by Mike Gruntman, Professor of Astronautics at USC (2023 March 24)

<https://www.linkedin.com/pulse/protect-avenge-40-years-strategic-defense-mike-gruntman/>

(This op-ed first appeared in Aerospace Daily & Defense Report, Aviation Week & Space Technology on March 24, 2023.)



Forty years ago in an address to the nation, President Ronald Reagan challenged the country to develop missile defenses where “we could intercept and destroy strategic ballistic missiles before they have reached our own soil or that of our allies.”

Within a few days, the program acquired the name of the Strategic Defense Initiative. Its “ultimate goal of eliminating the threat posed by strategic nuclear missiles,” would include an essential defensive layer in space, in addition to land-based components.

During the last few years, thousands of mass-produced, affordable commercial satellites began operating in orbit. This demonstrates that deploying a constellation of several thousand interceptor satellites for missile defense, as envisioned by the Strategic Defense Initiative (SDI), has become feasible and realistic.

SDI transformed the U.S.-Soviet competition in the Cold War. It shifted it from the offensive strategic forces based on rockets and nuclear technologies, the areas of the traditional strength in the Soviet Union, to the uncertainty of futuristic defensive systems of extraordinary complexity that relied heavily on rapidly advancing precision guidance, microelectronics and computers.

Disclaimer: The views of the speakers do not represent the views of AIAA or the AIAA Los Angeles-Las Vegas Section. Advertising space is available in the AIAA Los Angeles-Las Vegas Newsletter: Business card, quarter page, half page, and full page, non-AIAA LA-LV business/issues

The newsletter has over approx. 8,500 subscribers, which is growing.

To inquire about purchasing advertising, email Newsletter Editor at editor.aiaalav@gmail.com, or, editor-newsletter@aiaa-lalv.org



American Institute of Aeronautics and Astronautics
Los Angeles - Las Vegas Section

aiaa-lalv.org | aiaa-lasvegas.org
engage.aiaa.org/losangeles-lasvegas



To protect or avenge -- 40 years of the Strategic Defense Initiative

by Mike Gruntman, Professor of Astronautics at USC (2023 March 24)

<https://www.linkedin.com/pulse/protect-avenge-40-years-strategic-defense-mike-gruntman/>

The USSR harshly criticized the Strategic Defense Initiative. Following a quick denunciation by its supreme leader Yuri Andropov, many heads of Soviet academic and industrial research and development organizations signed the anti-SDI “appeal to all scientists of the world” to undermine the Reagan initiative. Characteristically, some among them had been advocating and leading similar weapon development programs for years.

Before the announcement of SDI, the U.S. concentrated primarily on research and development of technologies, after a brief, five-month operation in 1973 of the Safeguard system protecting a cluster of strategic missile silos. In contrast, the Soviet Union had deployed a permanent nuclear-armed land-based missile defense system around Moscow and was working on the next generation that stands on duty today. The USSR poured enormous resources into the development of missile defense. As Nikita Khrushchev famously bragged to visiting U.S. newspaper editors in 1962, “I know what antimissile systems are since we have them... Our missile, one can say, hits a fly in space.”

In the 1980s, the Soviet response to SDI became, to a significant degree, “symmetric” mirroring U.S. programs, despite the “asymmetric” rhetoric. The Soviet Union accelerated existing weapons programs and initiated new ones.

The country collapsed and disintegrated less than 10 years later. Another 10 years after, former deputy minister of defense of Russia Nikolai Mikhailov summarized the SDI impact, observing that the “name of U.S. President Reagan is linked with ‘the beginning of the end’ of our country, the USSR.”

Fewer than 10 countries possessed ballistic missiles in the 1980s. Today, more than two dozen boast such weapons. Some adversaries combine them with radical political views and ideologies and pursuits of weapons of mass destruction. Despite being so consequential for the survival of the nations, missile defense remains highly politicized, as it had been since its early days in the 1950s.

The opponents believe that defense against strategic missiles does not have technical solutions and focus on arms control. At the same time, others strive to develop realistic technical solutions to these security challenges. During the last decade, Israel’s missile defense spectacularly demonstrated its capabilities against smaller, tactical missiles and provided vital policy options to national leaders for response against existential threats.

The original SDI concept of a nonnuclear defensive space layer evolved to a constellation of interceptor satellites, Brilliant Pebbles. Several programs such as Delta180/181/183, MSX, and Clementine tested some related technologies. With the end of the Cold War in the early 1990s, the SDI was reorganized and faded away. However, some continued to advocate for -- without success -- the importance of space-based defense.

The improved sensor and guidance technologies enabled direct hit-to-kill intercepts of warheads. During the last decade, the United States deployed land-based interceptors in Alaska and California as part of the mid-course defense segment against a limited strike by strategic ballistic missiles from North Korea. Positioning such interceptors on the East Coast and perhaps in Europe is needed to defend against missiles from Iran. The mid-course intercepts in space would have been a primary task for the SDI’s space-based layer, and not limited, in contrast to land-based systems, to defense against ballistic missile attacks from particular geographic directions.

As life goes on and new threats emerge despite the fantasies of the end of history, the eternal competition between the sword and the shield continues. And the main question, encapsulated by Reagan in 1983 remains: “Wouldn’t it be better to protect the American people rather than avenge them?”

It is time to build a space-based missile defense layer.